



Integrating Technology with Markets

PIER & the Market

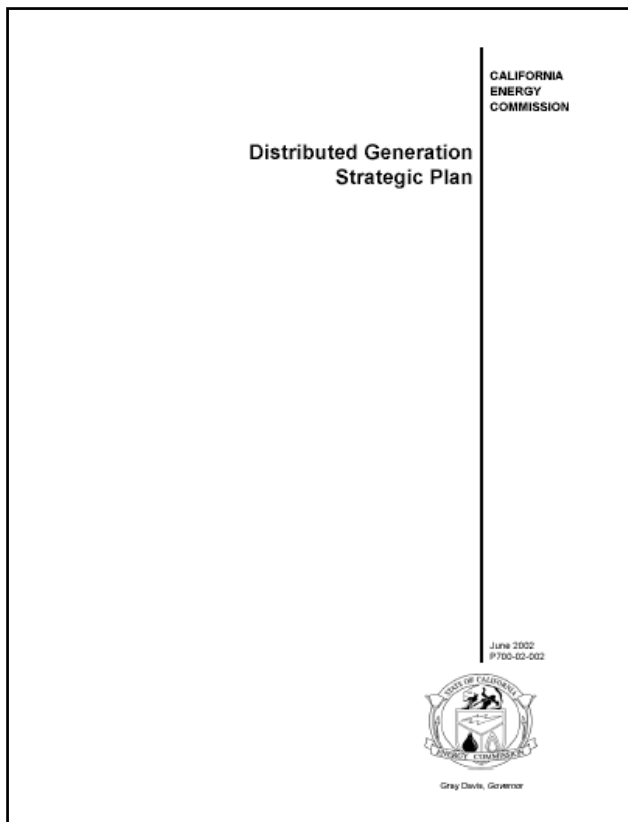
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Distributed Energy Resources
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Strategic Plan



- CEC recently completed DG Strategic Plan which formalizes vision, mission and goals of all CEC DER activities
- All of us together have a role to play to advance DER



Distributed Generation Strategic Plan June 2002 P700-02-002

www.energy.ca.gov/reports/2002-06-12_700-02-002.PDF



Implementation of the Plan is two-fold

- **Remove barriers that restrict DER deployment (e.g., Rule 21) for end users that choose DER**
- **Learn about grid and environmental benefits of DER and then foster them**

Vision

Distributed Generation will be an integral part of the California energy system, providing consumers and energy providers with safe, affordable, clean, reliable, and readily accessible energy services.

Mission

Energy Commission shall lead a statewide effort, which promotes and deploys distributed generation technologies to the extent that such effort benefits energy consumers, the energy system, and the environment in California.

Strategic Plan outlines near-term, mid-term and long-term goals to achieve the Vision

<p style="text-align: center;"><i>Near-term Goals (3-5 years)</i></p> <ul style="list-style-type: none"> • Establish a DG State Agency Coordination Group to cooperatively address DG issues and ensure consistent handling of these issues throughout state government. • Raise consumer awareness about distributed generation by creating and maintaining a central repository of DG general information. • Develop and conduct targeted consumer education campaigns. • Fund research, development and demonstration programs to advance the development and deployment of DG technologies • Assess the market, technological and regional potential for DG to determine a reasonable goal regarding electric generation capacity from DG by 2020. • Identify and address institutional and regulatory barriers, which are interfering with the purchasing, installation, and operation of DG facilities. 	<p style="text-align: center;"><i>Mid-term Goals (5-10 years)</i></p> <ul style="list-style-type: none"> • Reduce DG equipment costs to a level that would obviate the need to provide government incentives to deploy DG. • Enhance the emissions and efficiency profiles of DG technologies, monitoring and modeling techniques, and cost-effective control technologies such that the resulting environmental impacts, public exposure, and permitting support wide-scale deployment. • Establish markets that pay for the full value of DG, including grid benefits, environmental benefits, greenhouse gas reduction credits, energy conservation, and waste reduction benefits. • Certify and deploy DG systems in such a way that procuring DG is as routine, as purchasing appliances for the home. <p style="text-align: center;"><i>Long-term Goals (>10 years)</i></p> <ul style="list-style-type: none"> • Make California's energy generation and delivery system the cleanest and most efficient, reliable, and affordable in the nation by maximizing appropriate use of DG. • By 2020, ___ percent of all incremental generation will be DG (see Near-term Goal #5).
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Numerous issues were identified as part of Strategic Plan development

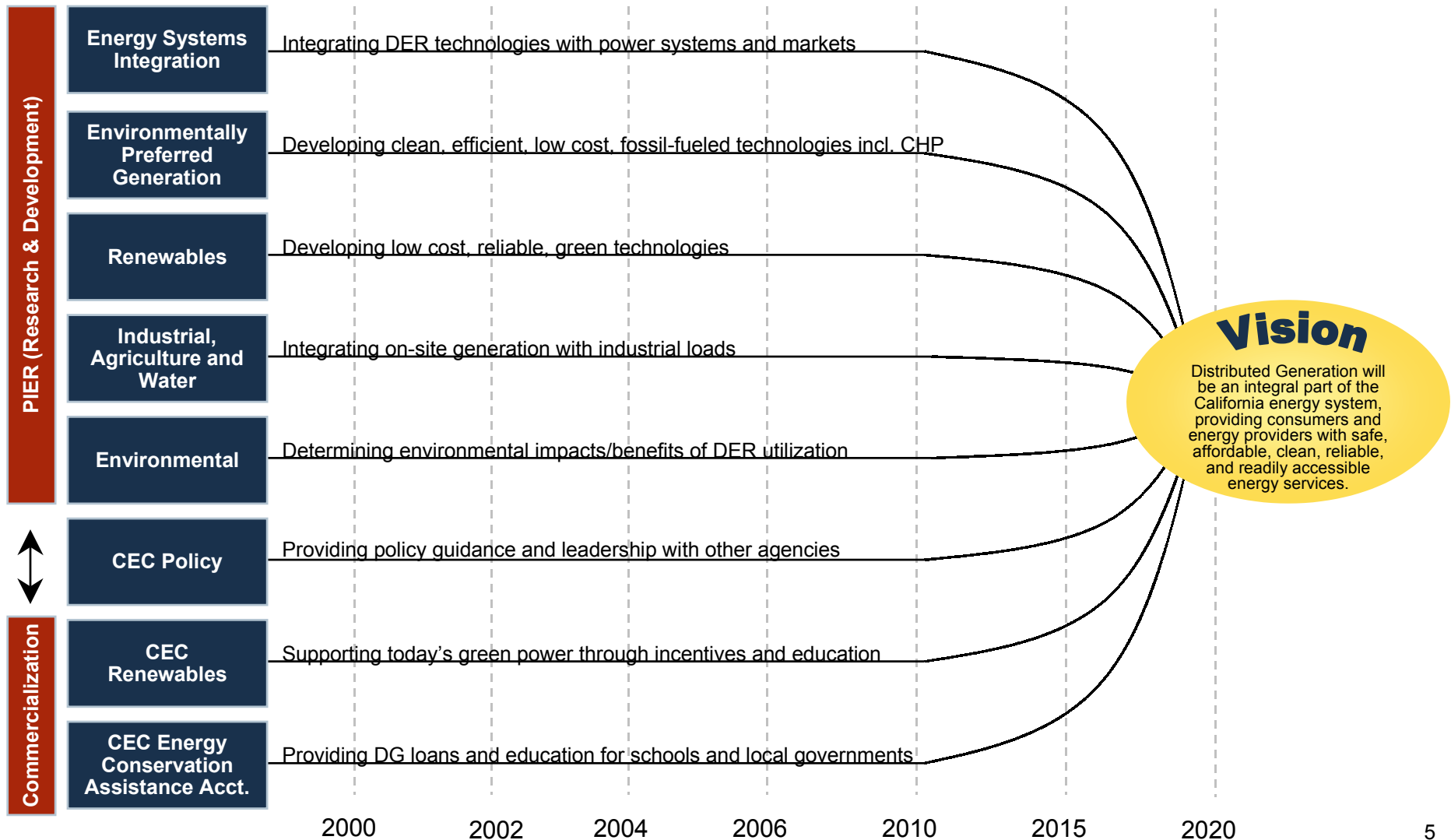
DER Issues	
A. Environmental Impact	<ul style="list-style-type: none"> • When will DER technologies have a positive impact on the environment? • Should clean DER technologies be subsidized or otherwise encouraged? • Should DER be used to improve air quality? • Should DER improve worker health and safety?
B. Low Cost Power	<ul style="list-style-type: none"> • Can DER be competitive with central power generation? • Should customers have the choice of DER to reduce power cost? • Is DER the most economically efficient approach to generating and delivering power to customers?
C. Generation Reliability	<ul style="list-style-type: none"> • Will DER improve customer power reliability? • Can customers use DER for high reliability and power quality needs?
D. Grid Effects	<ul style="list-style-type: none"> • Will DER improve grid reliability? • Will DER have a positive or negative effect on the power system? • Can grid effects be monetized and allocated to stakeholders? • How can the locational value of DER be exploited? • How can you measure and reward consumers for the grid benefits they generate through use of DER?
E. Interconnection	<ul style="list-style-type: none"> • Should technical requirements, processes and contracts be modified for DER? • Can DER be safely and cost effectively interconnected with the power system? • Is plug and play possible for DER interconnection?
F. Siting & Permitting	<ul style="list-style-type: none"> • Should siting and permitting requirements be modified for DER?
G. Integration	<ul style="list-style-type: none"> • How can DER be integrated with California's current system operations? • How can the system be operated to optimize DER?
H. Market Structure	<ul style="list-style-type: none"> • How can DER be integrated with California's current market structure? • Can the market structure be changed to create a win-win for all stakeholders? • How can utilities be incentivized to participate and/or encourage DER? • Can a market structure be created that will allow DER to compete? • Should California use net metering?

Note: Issue candidates are not listed in any particular order

CEC DER Roadmap



Efforts across the CEC are moving California to the Vision



PIER Goals



PIER established in 1996 as part of deregulation and includes \$62.5M for "public interest" energy R&D not adequately provided by competitive and regulated markets

PIER has 5 primary public benefit energy objectives. Research projects are considered for funding that, if implemented, produce technology, knowledge or procedures that will:

- Improve energy cost/value
- Improve the environment, public health and safety
- Improve electricity reliability, quality and sufficiency
- Strengthen the California economy
- Provide greater choices for California consumers



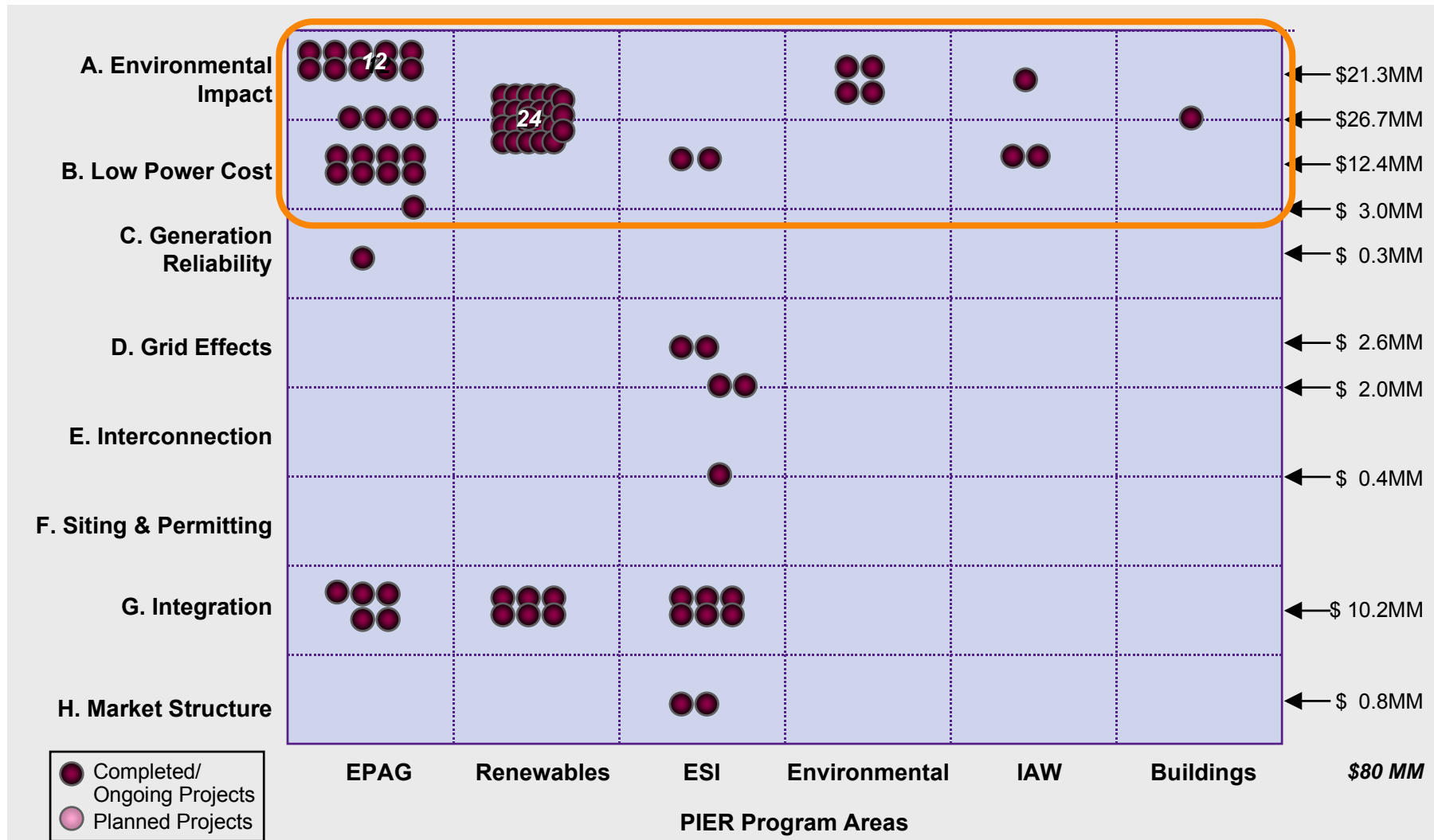
DER major PIER focus

- **84 projects totaling \$80M out of over \$255M in total PIER are DER related (projects under the small grant program are excluded)**
- **All six PIER program areas have projects that are DER related**
- **Research projects address all DER issues areas identified during Strategic Plan process**

PIER DER Portfolio



80% of PIER DER portfolio focused on reducing environmental impact and developing lower cost power



DER Integration Roadmap

